

## New specimens of the early Eocene frigatebird *Limnofregata* (Pelecaniformes: Fregatidae), with the description of a new species

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### Abstract

Four additional specimens from the Green River Formation of Wyoming are referred to the Eocene frigatebird *Limnofregata azygosternon* Olson, originally described from a nearly complete skeleton and two partial paratypes. Two skulls with mandibles and a partial postcranial skeleton are described as a new species, *Limnofregata hasegawai*, characterized by much larger size and a proportionately longer bill. One of the referred specimens of *L. azygosternon* is from Eocene Lake Gosiute, whereas all of the other specimens of *Limnofregata* are from Fossil Lake. The species of *Limnofregata* would have taken advantage of frequent periodic dieoffs of fish in the Green River lakes. Geological and climatic factors that may have influenced the paleoecology, distribution, and size variation in frigatebirds in the Cenozoic are reviewed.

**Key words:** Eocene, fossil birds, *Fregata*, Fregatidae, frigatebirds, *Limnofregata*, paleoecology, Pelecaniformes, sexual dimorphism, Wyoming

### Introduction

Modern frigatebirds are oceanic, aerial, predatory and kleptoparasitic Pelecaniformes with extremely long, narrow wings, long forked tails, and very reduced legs and feet used only for perching during the breeding season. Until now, the only Tertiary fossil record of the family consisted of three specimens of a primitive genus and species, *Limnofregata azygosternon*, from the early Eocene Green River Formation of Wyoming (Olson, 1977). The only other fossils of the family known are Quaternary remains of living species from oceanic islands (Olson, 1985).

Although fairly numerous fossil birds have been recovered from lacustrine deposits of the Green River Formation in Wyoming, Utah, and Colorado, most of them are small,